TEACHER GUIDE

MISSION: MULTIMEDIA EXPLORATIONS

FUEL YOUR IMAGINATION! CHALLENGE

*The NASA Exploring Space Challenges invites your class to participate in the **Mission: Multimedia Explorations, Fuel Your Imagination! Challenge.** Based upon an activity created for a NASA DLN™ webcast event, students must write a short story that incorporates real science, mathematics or engineering facts. Students then select a winning story from their class to be submitted to the **Fuel Your Imagination! Challenge**. Stories can be submitted under three categories: grades 3-4, 5-6 and 7-8. One winning story in each category will be selected as a national winner.*

On November 16, 2005, there will be three live webcasts of "Author Meets NASA Scientist: Turning Imagination into Reality." You and your students can watch author and artist Chris Van Allsburg meet with NASA scientist Jennifer Keys to share their thoughts about imagination in art and scientific exploration. Mr. Van Allsburg will also discuss his book, Zathura, and how he used creative writing to incorporate real science into his story.

Language arts and science teachers can collaborate for this activity to encourage their students to use their imaginations and write about their vision for space exploration to the Moon, Mars and beyond. For further detailed information about this event and the activities associated with it, you may visit:

http://nasadln.nmsu.edu/dln/

If you cannot watch the live event on November 16, but still would like to participate in this activity, please contact the NASA Exploring Space Challenges Project Office (NASA-ESC@nasa.gov) to obtain a copy of the archived webcast. An archive will be available after November 28, 2006.

RULES AND REGULATIONS

How does my school qualify? Do my students register for this? When are the stories due? All these questions and more are listed below with the **Mission: Fuel Your Imagination! Challenge** Rules and Regulations.

1. Only students in grades 3-8 may participate.

2. Registration opens Monday, November 21, 2005 and closes Monday, January 30, 2006.

3. Teachers must register his/her class by emailing **NASA-ESC@nasa.gov**. Include teacher name, school name, school address and email address.

4. All teachers planning to participate in this Challenge are expected to have their class watch the NASA DLN™ webcast event, "Author Meets NASA Scientist".

5. Teacher must lead a peer-judging event within their classroom to decide on one winning story to be submitted to the national challenge. Only one story per registered teacher will be permitted for submission.

6. Multiple entries from one school will be permitted if more than one class or teacher participates in this activity, but there is a maximum of two entries per grade category as long as each entry is from a different class or teacher.

7. Only that student whose name has been submitted through his/her teacher's registration will be allowed to submit a story to the national **Mission: FYI Challenge**.

8. Stories submitted to the national Challenge must be 1500 words or less.

9. Stories will be judged at the higher grade level of each judging category.

10. All local peer judging events must be arranged by the teacher/school and be completed prior to January 13, 2006.

11. Each winning student author from his/her class must upload own story[a] and complete evaluation questions to the **Mission: FYI Challenge** website by January 30, 2006.

12. Stories must be uploaded online as an Acrobat portable document (.pdf), Word document (.doc) or plain text (.txt). Paper copies will not be considered for judging. If the story contains original artwork, a copy can be mailed to the NASA ESC Project Office, but *artwork will not be judged as it is not a requirement for this Challenge*.

13. All entries are evaluated to the published rubrics and requirements for the **Mission: FYI Challenge**. Judges' decisions are final.

14. Only one story from each grade category (3-4, 5-6, 7-8) will be selected as a national winner. Each story will be published on-line and each student author will receive a personalized signed copy of *Zathura*.

15. An all-expenses paid trip to Space Camp will be awarded to one student for the best story nationwide. No family members or teachers will be included in this award.

[a] The NASA ESC Project Office understands that some students may have difficulty in uploading their own story, thus the teacher may email the story to the NASA Exploring Space Challenges Project Office if the student is unable to do so.

Mission: Fuel Your Imagination! Challenge Components

1. Digital Learning Network

A core component of this Challenge is based upon the DLN event, "Author meets NASA Scientist". This is a live webcast on November 16, 2005 out of NASA Langley Research Center. Artist and author Chris Van Allsburg will meet with NASA scientist, Jennifer Keys, to share their thoughts about imagination in art and scientific exploration. Mr. Van Allsburg will also discuss his book, *Zathura*, and how he used creative writing to incorporate real science into his story. Mr. Van Allsburg will also be fielding an assortment of questions from pres-selected students and teachers across the country. You can watch this live event on November 16, 2006 at:

10:00AM ET
1:00PM ET
3:30PM ET

The webcast can be linked from the Challenges website or directly through the DLN website:

http://nasadln.nmsu.edu/dln/content/catalog/details/?cid=441

It is not necessary to watch this event live if time is a constraint or if your school is finding out about this Challenge at a date after the live webcast. To take part in this Challenge, simply contact the NASA Exploring Space Challenges Project Office (NASA-ESC@nasa.gov) and request a copy of the archived webcast. The archive should be available after November 28, 2005.

2. Author Meets Scientist Lesson Plan

This Challenge is based upon an activity created by Houghton Mifflin in cooperation with NASA Office of Education. Students are encouraged to read the story, *Zathura*, and discuss the story components through a list of guided questions listed in the lesson plan. Students then must identify three or four real science, math or engineering facts and try to incorporate those facts into a fictional short-story they compose.

3. Evaluation Questions

An important part of each Challenge is an evaluation component. The NASA ESC Project Office has developed a set of questions for teachers and students participating in this Challenge. The students will not be judged on their answers to these questions. These are simply to monitor the progress of this Challenge and help the NASA ESC Office develop future Challenges. Evaluation questions must be submitted by **February 15, 2006**. Upon request, the NASA ESC Project Office will provide feedback on the evaluation questions to the teachers in the form of all student answers from the school and the scoring rubrics upon request.

We have also developed a supplemental evaluation activity for your own use. This activity includes questions related to our students' comprehension of *Zathura*:

1. Describe the setting of the story.
2. What conflict occurs in the story? Who is in the conflict?
3. List four major events that occur before the climax of this story.
4. How was the conflict resolved?
5. Give two examples of non-fictional facts that you found in this story.

NATIONAL STANDARDS

Grades 3-5: Science

Science as Inquiry

- Has ability to do scientific inquiry
- Has understandings about scientific inquiry

Physical Science

- Understands the properties of objects and materials
- Understands the position of and motions of objects
- Understands the motion of objects in relation to the forces applied on that object

Earth and Space Science

- Understands the objects in the sky
- Understands the Earth's place in the Solar System

Science and Technology

- Understands that science and technology work together
- Has basic understandings about science and technology

History and Nature of Science

- Understands that science is a human endeavor

Grades 3-5: Language Arts

- Uses general skills and strategies to acquire new information
- Use of spoken, written language to communicate effectively with a variety of audiences and for different purposes
- Uses a wide range of strategies during the writing process appropriately to communicate with different audiences for a variety of purposes

Grades 6-8: Science

Science as Inquiry

- Has ability to do scientific inquiry
- Has understandings about scientific inquiry

Physical Science

- Understands the motion of objects in relation to the forces applied on that object
- Understands the concept of transfer of energy

Earth and Space Science

- Understands the Earth's place in the Solar System
- Understands that the history of the Earth has been changing in life and form

Science and Technology

- Has basic understandings about science and technology

Science in Personal and Social Perspectives

- Understands the potentiality of natural hazards to human society

History and Nature of Science

- Understands that science is a human endeavor

Grades 6-8: Language Arts

- Uses general skills and strategies to acquire new information
- Use of spoken, written language to communicate effectively with a variety of audiences and for different purposes
- Uses a wide range of strategies during the writing process appropriately to communicate with different audiences for a variety of purposes

JUDGING RUBRIC FOR
Mission: Fuel Your Imagination! Challenge

Category	4	3	2	1
Focus on Space Exploration	The entire story is related to the assigned topic and allows the reader to understand much more about the topic.	Most of the story is related to the assigned topic. The story wanders off at one point, but the reader can still learn something about the topic.	Some of the story is related to the assigned topic, but a reader does not learn much about the topic.	No attempt has been made to relate the story to the assigned topic.
Scientific Facts	At least three scientific facts were included in the story.	Only two scientific facts were included in the story.	Only one scientific fact was included in the story.	There were no scientific facts used in this story.
Accuracy of Facts	All facts presented in the story are accurate.	Almost all facts presented in the story are accurate.	About 50% of the facts presented in the story are accurate.	There are several factual errors in the story.
Organization	The story is very well organized. One idea or scene follows another in a logical sequence with clear transitions.	The story is pretty well organized. One idea or scene may seem out of place. Clear transitions are used.	The story is a little hard to follow. The transitions are sometimes not clear.	Ideas and scenes seem to be randomly arranged.
Character Conflict	It is very easy for the reader to understand the problem the main characters face and why is it a problem.	It is fairly easy for the reader to understand the problem the main characters face and why it is a problem.	It is fairly easy for the reader to understand the problem the main characters face but it is not clear why it is problem.	It is not clear what problem the main characters face.
Solution / Resolution	The solution to the character's problem is easy to understand and is logical. There are no loose ends.	The solution to the character's problem is easy to understand, and is somewhat logical.	The solution to the character's problem is a little hard to understand.	No solution is attempted or it is impossible to understand.

APPENDIX

Timeline of Events for Mission: Fuel Your Imagination! Challenge

Event	Date	Notes
Registration	November 21, 2005 – January 30, 2006	Teachers must first register prior to student registration
DLN Webcast Event	November 16, 2005	Three live events available online.
Local Challenges	Complete prior to January 13, 2006	Students must peer-review stories in class
Submission deadline	January 30, 2006	Winning student author from each class to submit story online.
National Challenge	February/March 2006	Judged by NASA representatives and educators

Useful websites

The sites listed below are a sampling of existing NASA and other related sites on an assortment of topics. NASA does not endorse the non-NASA sites; they are offered merely as examples.

http://www.nasa.gov
The NASA portal.

http://www.nasa.gov/missions/solarsystem/explore_main.html
The latest information on NASA's Vision for Space Exploration. Click on the banner and explore an interactive site.

http://www.nasa.gov/audience/forkids/home/F_Vision_Slideshow_Text.html
An explanation of NASA's Vision for Space Exploration – the kid-friendly version.

http://ksnn.larc.nasa.gov/home.html
NASA's Kids Science Network site.

http://www1.edspace.nasa.gov/astroschool/survival/
NASA Educator Astronaut webpage that includes information all about NASA and astronauts.

http://marsprogram.jpl.nasa.gov
A great site to see the latest NASA science about Mars.

http://lunar.gsfc.nasa.gov/index.html
Another great site to explore the upcoming lunar mission.

http://www.houghtonmifflinbooks.com/features/zathura/
Private site sponsored by *Zathura* publishers, Houghton Mifflin.

http://teacher.scholastic.com/lessonplans/spacescience/index.htm
A private site sponsored by Columbia Pictures, this site has easy-to-use lessons and products about story-writing, with inspiring images from the feature film *Zathura*.

http://www.orangeusd.k12.ca.us/yorba/elements_of_a_story.htm
An education site that indicates the elements of a story.

http://hrsbstaff.ednet.ns.ca/engramja/elements.html
Another education site explaining story elements in detail.

http://www.readwritethink.org/materials/lit-elements/
A non-profit site that provides literary elements mapping, the graphic organizers for story elements.

Evaluation

Please return all responses to NASA Exploring Space Challenges Project Office by February 15, 2006.

NASA Exploring Space Challenges
c/o Dr. Marci P. Delaney
NASA Goddard Space Flight Center
Mail Code 130.3
Greenbelt, MD 20771

For each student response with corresponding teacher response returned to the NASA Exploring Space Challenges Office, we will send a *Fuel Your Imagination! Challenge* Certificate of Participation and a small prize.

Student Response

NASA Exploring Space Challenges would like to learn a little bit about your experience in the *Fuel Your Imagination! Challenge*. This is completely anonymous, so your answers will have no effect on your participation in the Challenge. Please circle the answer closest to how you feel. When finished, please return this to your teacher.

How much did you learn about how to use science in your stories?	none	some	a lot
How much better are you at writing a story with science in it now?	none	some what	a lot
How helpful was it to hear from the author of *Zathura*?	none	some what	a lot
How much do you like stories with science in them?	I don't	sort of	a lot
How likely is it that you will use science in your stories in the future?	I won't	I might	I will
How likely is it that you will have a career that uses science?	I won't	I might	I will
Are you more interested in space science after reading *Zathura*?	no	some	yes
How would you rate yourself as a writer before this experience?	poor	fair	excellent
How would you rate yourself as a writer after this experience with *Zathura*?	poor	fair	excellent
How good do you think your story is?	poor	fair	excellent

Teacher Response

Thank you for participating in the *Fuel Your Imagination! Challenge* with your students. We appreciate all the time and effort you put in to participate in this activity and select a winner! Please help us to learn about how this challenge has impacted your teaching by completing this evaluation. Circle the answer closest to how you feel.

How much did your students improve in writing stories with science in them?	no impact	a little	a lot
How much did they improve in writing stories in general through this experience?	no impact	a little	a lot
How would you rate your winning writer's work **before** this experience with *Zathura*?	poor	fair	excellent
How would you rate your winning writer's work as a result of this experience?	poor	fair	excellent
How often have you asked students to use science in their stories in the past?	never	a little	often
How likely is it that you will ask students to use science in their stories in the future?	never	a little	often
How often did you integrate science and language arts in the past?	never	a little	often
How likely are you to participate in a science and language arts activity in the future?	never	a little	often
How often did you use videoconferencing or webcasts in the past?	never	a little	often
How likely are you to use videoconferencing or webcasts in the future?	never	a little	often
How often did you incorporate NASA science ideas and activities in your class in the past?	never	a little	often
How likely are you to incorporate NASA science ideas and activities in your class in the future?	never	a little	often

For each student response with corresponding teacher response returned to the NASA Exploring Space Challenges Office, we will send a *Fuel Your Imagination! Challenge* Certificate of Participation and a small prize.

FYI! Activity Supplement

Fuel Your Imagination!: Thinking about Science in Zathura

In the **Fuel Your Imagination! Challenge**, you have a chance to learn about how to use science in a story. Science helps us understand our world and is fun. Using your understanding of science, you can write a fun and exciting story. You will learn how Chris Van Allsburg used science in Zathura, and then you will be able to use science in a story of your own.

After you have read Zathura, think about how the author used science in the story, and what each story element does to enhance the reader's experience.

1. CHARACTERS

What science ideas do we learn through the characters of Danny and Walter?

How does the author use the characters to show us science ideas?

Why do we have characters in a story? What do they add to a story?

2. SETTING

What science ideas are in the setting of Zathura?

How does the author use the setting to show us science ideas?

What is the purpose of the setting in a story?

3. CONFLICT

What conflict occurs in the story? How was this conflict resolved (the resolution)?

How does the author use science in the conflict?

What is the purpose of conflict in a story?

4. RISING ACTION

List four major events that occur before the climax of this story. This is called the rising action.

How does the author use science ideas in the rising action?

What is the purpose of the rising action?

5. CLIMAX

What is the Climax of this story?

How does the author use science ideas in the climax of Zathura?

What is the purpose of the climax in the story?

Fuel Your Imagination!: Thinking about Science in Your Story

Now you have written your own story. Describe how you used science in your story, and what each story element does?

1. CHARACTERS

What science ideas do we learn through the characters in your story?

How did you use the characters to show us science ideas?

What is the purpose of characters in any story?

2. SETTING

What science ideas are in the setting of your story?

How did you use the setting to show us science ideas?

What is the purpose of the setting in any story?

3. CONFLICT

What conflict occurs in the story? How was this conflict resolved (the resolution)?

How did you use science in the conflict?

What is the purpose of conflict in any story?

4. RISING ACTION

List four major events that occur before the climax in your story. This is called the rising action.

How did you use science ideas in the rising action?

What is the purpose of the rising action?

5. CLIMAX

What is the Climax of your story?

How did you use science ideas in the climax of Zathura?

What is the purpose of the climax in any story?